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Dr. C. H. VILAS'

EYE NOTES.

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Entered according to Act of Congress in the year 1878, by

C. H. VILAS, M.D.,

In the Office of the Librarian of Congress, at Washington.

These Eye Notes were prepared to assist in the study, and form the basis of the didactic lectures on the embraced subjects as given by the author at the Hahnemann Medical College and Hospital, Chicago. They are necessarily concise, condensed and elementary in their character, and are in no sense designed to take the place of, or in any way supersede the treatises on the subjects, but are intended to suggest the topics to be further studied, to pick out of the mass of writings the essential fundamental principles and main diagnostic points, and to suggest the line of treatment. Their cordial reception, not only by students, but by practitioners, has seemed to be sufficient reason for a publication more general than was originally intended.

The attempts to prepare an abbreviated materia medica must be always attended with hazard, and will doubtless be found incomplete. Additions of new remedies and well-authenticated symptoms will be made from time to time, and the whole enlarged and improved, may form the basis for a more pretentious work at some future time. But it is not to be expected that any one will always prescribe on local symptoms alone, but be guided by a more thorough knowledge of the remedies otherwise obtained. For their peculiar wording, the author is often alone responsible; but not only in them, but in the preparation of the diseases, all works accessible have been freely used. It is hoped this statement will serve as a full and courteous acknowledgement of the great assistance necessarily derived from many excellent publications.

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CINNABARIS. 1. "Pain from inner canthus of left eye across the eyebrows." 2. Ciliary neuralgia.

CLEMATIS. 1. "Biting, burning pains in the eye." 2. "Burning in the eyes as if fire were streaming out of them." 3. "Burning, sticking pains in the inner canthus of the left eye."

COLOCYNTHIS. 1. "Pains always relieved by pressure." 2. "Cutting pains in the eye." 3. "Lachrymation profuse and acrid."

CONIUM MAC. 1. Excessive photophobia, caused by superficial ulceration of the cornea. 2. Excessive photophobia, the terminal filaments of the ciliary and conjunctival nerves being exposed. 3. "Weakness and dazzling of the eyes, with giddiness of the whole body." 4. Inability to raise the eyelids. 5. Double vision.

6. "A heat which is burning moves rapidly through the eye." 7. Burning on the inner surface of the lids. 8. Induration of the lids. 9. Asthenopia. 10. Hyperæsthesia of the retina. 11. "Inability to bear either light or heat."

CROTALUS HORRIDUS. 1. "Hæmorrhages into the retina." 2. "Clears up the vision after attacks of keratitis."

CROTON TIG. 1. Superficial and deep ulcers of the cornea. 2. Pustules on the cornea. 3. Pustules on the conjunctiva. 4. Pustules on the lids. 5. Eczema of the lids.

CYCLAMEN. 1. "Muscæ volitantes disappear." 2. Flickering before the eyes. 3. Strabismus convergens.

DIGITALIS. 1. Relieves exophthalmic goitre, with severe heart symptoms. 2. "Tensive throbbing in left eye."

EUPHRASIA. 1. "Redness and swelling of the margin of the lids." 2. Burning and swelling of the margin of the lids, with sensation of great dryness. 3. "Biting water runs from the eyes." 4. Lids swollen and red. 5. Cornea covered with mucus.

6. "Burning in the eyes, with lachrymation." 7. "Lids red, swollen and covered with a thick, yellow, acrid discharge." 8. Catarrhal inflammations of the conjunctiva. 9. Strumous inflammations of the cornea. 10. Catarrhal inflammations from exposure to cold.

11. "Yellow, muco-purulent, thick and excoriating discharge, making the lids sore." 12. Opacities of the cornea from frequent attacks of inflammation. 13. "Blurring of the eyes, relieved by winking."

FERRUM. 1. Exophthalmic goitre.

GELSEMIUM. 1. Paralysis of recti muscles. 2. Paralysis of external recti muscles. 3. "Drooping of the eyelids." 4. "Eyelids half-closed, with apparent inability to move them." 5. "Great heaviness of the lids."

6. Diplopia. 7. "Control over the upper eye-lid almost lost." 8. Diseases of the uveal tract. 9. Serous exudations. 10. Detachment of the retina.

11. "Snake before the eyes." 12. "Constant inclination to squint." 13. "Inflammatory affections of retina and choroid." 14. Paresis of the muscles.

GRAPHITES. 1. "Dry scurfs on the cilia." 2. "Moist eczematous eruptions of the lids." 3. Tarsal tumors. 4. External canthi fissured. 5. External canthi crack and bleed easily.

6. Scrofulous ulcers and pustules. 7. Eyes and nose sore and surrounded by thick moist scabs. 8. Intense photophobia, with thin, acrid discharge from the nose. 9. "Very inflamed margins of the lids." 10. Heat, dryness and pressure about the lids.

11. "Superficial ulcerations with vascularity of the cornea."

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BRYONIA ALB. 1. Especially adapted to serous exudations. 2. "Choroiditis and irido-choroiditis." 3. "Pains very severe; aggravated by motion of the eye-ball." 4. Very sensitive pressive pain in the left eye-ball, especially violent on moving it. 5. Ciliary neuralgia, worse on motion of any kind. 6. Diseases of the uveal tract. 7. Sclera highly inflamed.

CACTUS GRAND. 1. Dimness of sight dependent on retinal and optic-nerve diseases. 2. Inflammation of optic nerve, when heart is diseased. 3. Great congestion of eye, with heart troubles. 4. Exophthalmic goitre.

CAFFEIN. 1. Nervous sleepless women, with eye troubles. 2. Particularly indicated for sleeplessness after operations. 3. Pains of glaucoma and iritis are alleviated.

CALCAREA CARB. 1. Superficial inflammations caused by wet, or worse in damp weather. 2. "Inflammations of margins of lids, loss of lashes, with thick purulent excoriating discharge, and burning, sticking pains." 3. "Blepharitis, with great itching in lids." 4. "Scrofulous inflammations of the conjunctiva and cornea." 5. "Nebulæ of the cornea."

6. Constitutional symptoms are often the best guide. 7. Eye affections in pot-bellied children. 8. "Entropion or ectropion in the beginning." 9. Sees small things best. 10. Long-lasting supra-orbital neuralgia.

11. Eyes inflamed and injected at every exposure to cold. 12. Scrofulous affections of the orbital bones. 13. Trachoma in tubercular subjects.

CANTHARIS. 1. "Severe burning pains in the eye." 2. "Eyes red and suffused with tears; burning in the lids."

CAUSTICUM. 1. Cataractous lenses. 2. Paralysis of the muscles, especially from taking cold. 3. "Sensation of heaviness in the upper lid; cannot be easily raised." 4. "Warts on the lids and brows." 5. Blepharitis, "especially if ameliorated in the fresh air."

6. "Paralysis of the ciliary muscle." 7. "Paralysis due to rheumatism, or getting the feet wet." 8. The upper lids fall down; are nearly paralyzed.

CEDRON. 1. Ciliary neuralgia. 2. "Pains severe, sharp and shooting." 3. "Pains start over the eye, and extend along the branches of the supra-orbital nerve into the head."

CHAMOMILLA. 1. Child fretful, wants to be carried all the time, when troubled with eye complaints. 2. Especially adapted to superficial inflammations. 3. Especially useful in eye complaints in fretful children, when they are teething, etc.

CHINA. 1. Eye complaints aggravated by loss of blood. 2. Amblyopia due to venereal excesses. 3. Eye complaints when due to loss of animal fluids. 4. Eye complaints, accompanied by great prostration of general system. 5. Eye complaints intermitting with other troubles. 6. "Sees better after sleeping."

CHININUM SULPHURICUM. 1. Intermittent strabismus. 2. Eye complaints with intermittent fever. 3. Paroxysmal eye complaints.

CICUTA VIROSA. 1. "On attempting to stand, objects seem now to come nearer, and now to recede, causing a desire to hold on to something." 2. Periodic and spasmodic strabismus. 3. "Trembling and twitching of the lids."

CIMICIFUGA. 1. "Aching pain in both eye-balls." 2. Heaviness of the eyes, as if caused by cold. 3. Stinging in the eyelids. 4. Pain in the centre of the eye-balls. 5. Pain in the eye extending to the top of the head.

CINA. 1. "Asthenopia, especially when due to some refractive anomaly." 2. "Strabismus, dependent on helminthiasis." 3. "Sickly look about the eyes, with paleness of face." 4. Blackness before the eyes, with dizziness and faintness on rising; relieved on lying down.

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ARSENICUM. 1. "Eyelids œdematous, often completely closing the eyes." 2. "Burning in the eyes, nose and mouth." 3. "Corrosive tears, making the cheeks and eyelids sore." 4. "Feeling of sand in the eyes in the evening." 5. "Severe and constant burning in the eyes." 6. Edges of lids very red. 7. "Extreme redness of the inner surface of the lids." 8. "Continual trembling of the upper lids, with lachrymation." 9. "œdematous eyelids, firmly and spasmodically closed." 10. "Dryness of eyelids as if the eye were rubbed by them, when reading by artificial light." 11. "Burning in margin of upper lids." 12. "Conjunctiva minutely injected; diffused, pale redness." 13. "Yellowness of conjunctiva." 14. "Pulsative throbbing in the eyes, and with every pulsation, a stitch; after midnight." 15. "Characteristic pains are often periodic." 16. Pains worse at night, with much thirst. 17. "Excessive photophobia and lachrymation, with great prostration." 18. "Eye symptoms accompanied by great prostration and nervous irritability." 19. Eczema of the lids. 20. "The pains are aggravated by light and by moving the eye." 21. Long known as an empirical remedy in neurotic diseases.

ASAFŒTIDA. 1. "Severe boring pain above the brows." 2. "Deep-seated inflammation of the eyes attended by ciliary pains." 3. "The pains are usually throbbing, beating, boring or burning in character, either in the eye, over or around it." 4. Syphilitic iritis, especially after the abuse of mercury.

AURUM MET. 1. "Constant feeling of sand in the eyes." 2. "Constant lachrymation." 3. Pressure in the eyes, as from a foreign body. 4. "Burning, stitching, drawing, and itching in the inner canthus of the eyes." 5. "Half-sightedness, as if the upper half of the vision were covered with a dark body; upper objects remain invisible." 6. "Everything is seen double." 7. "Corneal ulcerations, and pannus-like thickening of the outer layer." 8. "Infiltrated cornea and fine interstitial vascularity." 9. Useful after the abuse of mercury. 10. "Trachoma, with pannus." 11. "Scrofulous ophthalmia, with ulcerations and vascularity of the cornea." 12. "Pains dull or burning in character, compelling one to close the lids usually, worse in the morning, and ameliorated by the application of cold water." 13. Periostitis and caries of the orbits. 14. Especially useful in suspected syphilitic dyscrasia.

BELLADONNA. 1. Lids puffy, red and congested. 2. Conjunctiva red and swollen. 3. Burning heat in the eyes. 4. Lachrymation, with great photophobia. 5. Hæmorrhage and ecchymosis of the eye. 6. "Objects appear inverted." 7. "The eyes become distorted, with redness and swelling of the lids." 8. Hyperæmia of the optic nerve and retina, especially when consequent on cerebral congestion. 9. Hyperæsthesia of the retina. 10. Pains in the eyes from congestive headache. 11. "Blepharitis, when lids are swollen and red." 12. "Acute aggravations of chronic diseases." 13. Photophobia. 14. Hyperæmia of the conjunctiva. 15. Double vision. 16. Conjunctiva intensely dry and brawny. 17. "Motion of the eyes accompanied by a sensation of dryness and stiffness." 18. "Inflammatory swellings of the lids and conjunctiva, with throbbing." 19. Apoplexy of the retina. 20. Alleviates the pains of glaucoma. 21. "Removes deep-seated and obstinate hæmorrhages into the eye." 22. "Dimness of vision from congestive headaches." 23. "Dilated pupils." 24. "Sparks before the eyes." 25. "Halo around the flame, red predominating." 26. Blindness after the suppression of rashes. 27. Blindness following severe congestive headaches after scarlet fever.

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ACONITUM NAP. 1. Inflammations which are very painful, with dryness, heat and burning. 2. "Lids swollen, red and hard." 3. The conjunctiva is intensely hyperæmic and chemosed. 4. Inflammatory conditions resulting from the irritation of foreign bodies. 5. Hyperæmia of the conjunctiva.

6. Chemosis of the conjunctiva. 7. Violent acute inflammation of the deep structures of the eye-ball. 8. Ophthalmitis. 9. "Eye-ball very sensitive to the touch." 10. "Intense burning heat in the eye-ball."

11. "The eye-balls feel enlarged, as if coming out." 12. "Vision as through a veil." 13. "Eyes dull, encircled by blue rings." 14. Inflammation causes so much pain and fright that death is desired. 15. "Slight irritation of the edges of the lids."

16. "Sensation as if the whole eye-ball would be pressed into the orbit." 17. Inflammatory symptoms, high strong pulse. 18. Acute aggravations of chronic troubles. 19. Ulcers of the cornea from traumatic causes.

ACARICUS. 1. "Twitchings of the lids." 2. "Twitchings of the ball, often very painful." 3. "Biting, itching and jerking above the brow." 4. "Soreness of the balls, with itching and twitching of the lids." 5. "Spasms of the ciliary muscle."

ALLIUM CEPA. 1. "Excessive lachrymation." 2. "Lachrymation with coryza." 3. "Sensation as of something under the lids, which causes a gush of tears to wipe it out."

ALUMINA. 1. "Burning dryness in the eyes." 2. Absence of lachrymation marked. 3. "Chronic granular conjunctivitis." 4. Paralysis of internal recti muscles. 5. "Burning in the lids," and "absence of lachrymation" are characteristics.

6. Upper lids weak, and hang down as if paralyzed. 7. Cilia fall out easily. 8. Pimples in the lids. 9. Sense of lameness in the upper lids. 10. Squinting of the eyes.

AMYL NIT. 1. "Exophthalmic goitre."

APIS MEL. 1. "Lids much swollen, red and cedematous." 2. "Swelling about the eyes." 3. "Burning, stinging and sensation of swelling around the eyes, and in the superciliary ridge." 4. "Smarting and sensation of burning in the eyes, with bright redness of conjunctiva; very sensitive to light." 5. "Burning in the margin of the lids, causing lachrymation."

6. "Eyes water and are painful when looking at anything light." 7. "Upper lid swollen, hangs like a sack over the eye." 8. "Lachrymation profuse and hot, but not excoriating." 9. "Absence of thirst very marked."

ARCENTUM NITRICUM. 1. "Conjunctivitis, abating in the cool and open air, intolerable in warm room." 2. "Infra-orbital neuralgia." 3. "Boring above the left eye." 4. "Canthi red as blood." 5. "Caruncula lachrymalis swollen."

6. "Clusters of intensely red vessels extend from the inner canthus to the cornea." 7. "Increased secretion of tears." 8. "Itching of canthi." 9. "The eyes are filled with mucus." 10. "Mucus in the eyes, drying upon the lashes and forming scurfs."

11. Conjunctiva of balls and lids as red as blood. 12. "Bodies in the shape of serpents before the vision." 13. "Profuse muco-purulent discharge from the eye." 14. "Heat and pain in the ball."

ARNICA. 1. "Hæmorrhage and ecchymosis from blows, wounds, etc." 2. "Subconjunctival ecchymosis." 3. "Dryness of margin of upper eyelids; sore and painful when moved." 4. "Retinal hæmorrhages." 5. Obscure troubles caused by injuries.

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GLAUCOMA.

Synonym : Arthritic Ophthalmia.

Divisions : Acute and Chronic.

CAUSES. Somewhat obscure : often caused by mental emotions, as prolonged grief, etc. Hereditary. Neuralgia of fifth nerve. Irritations of the ciliary nerves. Retinal hæmorrhage.

SYMPTOMS. The symptoms of acute glaucoma are those of intense acute inflammation. Generally preceded by what are known as prodromal symptoms as below, but greatly intensified; then bursts forth with addition of severe headaches and terrible ciliary neuralgia; cloudiness of the aqueous and vitreous humors; dilatation and sluggishness of the pupil, which perhaps is filled with a greenish reflex; photophobia, lachrymation, and conjunctival congestion; often fever and vomiting; cornea clouded, iris jammed against it, the anterior chamber being obliterated; tension increased until the eye may become as hard as stone : marked changes in the fundus, but generally not to be seen owing to condition of the refractive media. They are pulsation of the arteries; swollen, beaded appearance of the veins; slight retinal hæmorrhages; peculiar cupping of optic disc.

Chronic glaucoma (synonym, simple glaucoma), on the other hand is an insidious disease, stealing on unawares often. The prodromal symptoms are mild usually, and often needlessly overlooked, and disease steals on, to become hopelessly incurable, or burst into acute form. Its symptoms are increase of tension; mild hyperæmia and inflammation; the peculiar excavation of the optic nerve; and decrease of vision, with narrowing of visual field. Both forms, particularly the acute, are often mistaken for other diseases, as bilious fever, brain troubles, etc.

Confirmed glaucoma (synonym, *glaucoma absolutum*), renders the globe hard as stone, pupil dilated, lens opaque, cornea dull and insensitive, anterior chamber shallow.

Prodromal symptoms are rapid increase of any existing presbyopia; colored rings around a light; intermittent obscurations of sight; ciliary neuralgia; slight variable increase of intra-ocular tension; narrowing of visual field and dimness of vision.

NOTE. Glaucoma is one of the most dangerous and least generally understood diseases of the eye. Badly or neglectfully treated, results in certain blindness. Hypermetropic eyes most liable to it, generally attacking one and extending to the other. Intervals, or periods of remission may be days or years. When rapid, destroying sight in a few hours, or even in less time, it is called *glaucoma fulminans* (lightning glaucoma); when following ordinary inflammation or injuries of the eye, secondary glaucoma. Both eyes are usually affected, often first one and then the other. Females at and beyond the change of life are notably susceptible. The cupping of the optic disc is peculiar and not easily confounded with either the physiological or atrophic cupping. Rapidly advancing presbyopia is suspicious. Treatment requires good judgment and experience. Remedies are often of great aid associated with proper local treatment.

LOCAL TREATMENT. Paracentesis or iridectomy, according to severity and nature of attack. Until recently, great stress has been laid on the necessity for a broad iridectomy quite up to the ciliary margin, and explicit directions given for performing the same. Experienced judgment is the best guide as to the kind of iridectomy needed. If performed early, good results almost certain; tardy hesitating treatment generally punished with loss of vision. In early stages paracentesis properly performed, with proper remedies, is frequently all-sufficient. With caution, atropine, which see.

GENERAL TREATMENT all important. See Principles of Ophthalmic Surgery.

REMEDIES. Aconite, Belladonna, Bryonia alb., Colocynth, Cypripedin, Macrotin, Mercurius, Prunus spin., Spigelia.

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IRIDO-CYCLITIS.

CHIEF CAUSES. Often primarily, cyclitis, but generally springs up in connection with iritis, or with choroiditis. Frequently arises from injuries, such as wounds in the ciliary region, dislocated lens, or foreign body in the eye. May also be sympathetic from the other eye.

SYMPTOMS. Great tenderness on pressure over the ciliary region, with pain, is the main diagnostic symptom. This is not present in iritis. Accompanied by turbidity of the vitreous and aqueous humors; loss of accommodation; photophobia and lachrymation; impairment of vision; zone of vessels around the cornea; increase of tension.

NOTE. Irido-cyclitis is an extremely dangerous and insidious disease. Often steals on quietly without subjective warning, and hence unnoticed until beyond hope. It often much resembles iritis, and is in consequence overlooked. An exudation is poured out which may be either serous, plastic or purulent. Either or both of the last two are the most destructive. Eye becomes hopelessly glued together or totally breaks down. When this condition is brought about by sympathetic ciliary nervous irritation from an injured companion eye, it is called "sympathetic irido-cyclitis," or "sympathetic ophthalmia." May come on immediately or after the lapse of years. Do not confound sympathetic irritation with sympathetic irido-cyclitis. The former may be present and quiet down, the latter extremely seldom if ever. The symptoms of sympathetic irritation are irritation and slight injection of the eye; neuralgic pain; slight photophobia and lachrymation; eye quickly fatigues at near or fine work. These may occur frequently and pass off with no organic lesions remaining.

LOCAL TREATMENT. When primary, complete rest, protection, cold, heat, atropine, and remedies seemingly indicated may be tried, a careful watch being kept on companion eye for first symptoms of irritation. When sympathetic, the injured eye must be removed at once. There is danger and often a very great, but not necessarily destructive, risk of sympathetic ophthalmia taken, in not enucleating an eye seriously injured by disease or wound; but so long as there is sight in the injured eye, and no sympathetic irritation in the companion eye, it may be watched and allowed to remain.

GENERAL TREATMENT. Good food and hygienic arrangements are all important.

PUSTULAR KERATITIS.

Synonyms: Herpes Ophthalmicus; Phlyctenular Keratitis.

CHARACTERIZED by circumscribed inflammatory nodules in the superficial layers of the cornea, most often at the margin, singly or in groups.

CHIEF CAUSES. Particularly associated with the weak, nervous and badly-nourished. Often epidemic. Seen in connection with the eruptions of herpes, eczema, etc., in the course of trifacial nerve. Irritations of ciliary nerves through the trifacial, or direct. Often associated with nasal catarrh.

NOTE. Vesicles form on these nodules and burst, forming ulcers; or they may result directly from loss of tissue on the nodules. Photophobia and pain generally very marked, former seemingly out of all proportion to the inflammation. Often combined with pustular conjunctivitis. Secretions from the eye acrid, irritating and burning the parts in contact. Disease apt to recur.

LOCAL TREATMENT. Protective bandage and atropine. Proper and judicious use of the finest powdered calomel, carefully dusted on, is often of the highest advantage. Absolute cleanliness of the lids and eye.

REMEDIES. See Suppurative Keratitis.

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CATARRHAL CONJUNCTIVITIS.

Synonym: Catarrhal Ophthalmia.

CHIEF CAUSES. Exposure; the exanthematous diseases; injuries; bad hygiene; consequent on other inflammations; ametropia; foreign bodies; contagion. Preceded by hyperæmia.

SYMPTOMS. Sensation of sand in the eye; smarting, itching and lachrymation; increased vascularity; chemosis; sticking together of the lids, especially after sleeping; mucous or mucopurulent discharge, the latter collecting in, and known by, whitish flakes containing albumen, mucous and epithelial cells. Lids grow red, swell and become stiff. Often numerous small hæmorrhagic spots.

NOTE. The classification of conjunctivitis is arbitrary: one form may run into another. All are infectious and contagious: the discharge from one form may produce its own kind, or that of another. May be endemic or epidemic.

Caution.—Use extreme care as to cleanliness, isolation of all towels, basins, etc.

LOCAL TREATMENT. Extreme cleanliness always. Cold applications in primary stages, with protection. Mild astringent lotions when necessary. Corneal and iritic complications may require atropine.

GENERAL TREATMENT and constitutional must not be neglected.

REMEDIES. Allium cepa, Apis mel., Argentum nit., Arsenicum, Belladonna, Euphrasia, Graphites, Hepar sulph., Merc sol., Nux vom., Pulsatilla, Rhus tox., Sulphur.

PURULENT CONJUNCTIVITIS.

Synonyms; Blenorrhœa; Military or Egyptian Ophthalmia.

Varieties: Gonorrhœal Conjunctivitis; Ophthalmia Neonatorum.

CHIEF CAUSES. Same as catarrhal variety.

SYMPTOMS. Same as catarrhal, but greatly intensified. Discharge purulent, thick and highly contagious. Often great chemosis.

NOTE. The classification is arbitrary. Read carefully Note under catarrhal variety. Great danger of cornea becoming involved, causing ulceration, sloughing and not infrequently loss of the eye. Study the corneal dangers and their treatment. Gonorrhœal conjunctivitis is usually very severe and shows great tendency to constitutional symptoms, which often are extremely severe. Ophthalmia neonatorum may be very mild or very severe.

LOCAL TREATMENT. No disease requires greater judgment or more careful diagnosis in this matter. Extreme cleanliness always. When discharge has not set in, conjunctiva being tense, hot and dry, use soothing applications, such as atropine, and feel the way carefully. When discharge is fully established, an astringent lotion every few hours; or it may be necessary to paint inner surface of lids once or twice daily with a strong solution of silver nitrate (which see) or other similar remedy. If cornea becomes cloudy, atropine must be used. Canthoplasty, if lids press too closely on the globe. Seal up the non-affected eye, if necessary; in any event use the greatest caution that the disease be not communicated to it. Cool, or even iced, applications may be demanded in severe cases.

GENERAL TREATMENT. This disease often greatly drains the system; gonorrhœal variety particularly so. Keep strength up. Disinfect the room.

REMEDIES. Aconite, Apis mel., Argentum nit., Calcarea carb., Chamomilla, Hepar sulph., Mercurius, Nitric acid, Pulsatilla, Rhus tox.

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KERATITIS.

Synonyms: Corneitis; Inflammation of the Cornea.

CHIEF CAUSES. Inflammation of adjacent parts; bad nutrition; constitutional disease; injuries; exposure.

SYMPTOMS more or less attendant on all varieties:

1. Ciliary irritation.
2. Rosy zone of vessels around corneal margin, with conjunctival congestion.
3. Contraction of pupil.
4. Pain.
5. Photophobia and lachrymation.
6. Impaired vision.

Classification arbitrary, but for convenience divided into

1. Vascular.
2. Pustular, (synonyms: phlyctenular; herpes of the cornea).
3. Suppurative.
4. Interstitial, (synonyms: parenchymatous; diffuse).

NOTE. Keratitis may involve whole or part of the cornea, and is named according to the predominant kind of inflammation present.

Opacities are frequently result of keratitis. Are superficial and deep; former affecting epithelium—generally curable; latter affecting parenchyma—seldom curable. Faint superficial opacity called a *neubla*—sometimes a *macula* when more like a spot; deeper, denser one, a *leucoma*, but when combined with prolapse and adhesion of iris, a *leucoma adherens*.

Caution.—Use no nitrate of silver or other irritants or preparations of lead in acute keratitis.

Opacity may be so situated as to be no hindrance to vision, or may shut out vision wholly or in part. May cause cross-eye, nystagmus, etc. If unsightly, may be stained with india-ink, but operation dangerous, unless thoroughly conversant with eye diseases. Cloudiness of cornea may be due to glaucoma, serous iritis, irido-choroiditis, or other disease, cornea being secondarily implicated, and real cause overlooked. A common error, involving loss of sight in many cases.

Cornea becomes turbid, swollen and thinned; may burst and contents prolapse, forming a staphyloma. Corneal curvature thus becomes astigmatic, and vision damaged or destroyed. Hence the caution to prevent intra-ocular pressure by bandage or iridectomy.

A staphyloma may necessitate the removal of the eye, for fear of sympathetic ophthalmia of the companion eye. Some prefer to excise the anterior portion of the globe, evacuate the contents, and bringing together the remnants form a good stump for the wearing of an artificial eye. This latter operation, however, is not free from the danger of sympathetic trouble, and may cause it.

Old chronic indolent ulcers, showing little disposition to heal, may sometimes be advantageously gently touched with weak silver nitrate to stimulate them.

Superficial opacities will generally get well independently of remedial aid, but are accelerated by the proper remedy. Local irritants judiciously used will also hasten the tissue changes, but must be cautiously used, if at all.

PANNUS is a superficial non-inflammatory vascular opacity of the cornea. Term often applied to acute and chronic vascular keratitis, new tissue still being in process of formation. Disease tedious in its course, complete cure seldom. Caused by granular conjunctivitis, inverted lashes or other irritating substances. Requires thorough knowledge and careful study to cure. Canthoplasty often advisable. Hot and cold applications, syndectomy and remedies should be carefully studied and tried previous to any of the severer means. Inoculation of purulent matter is a final resort. This artificial disease is then allowed to run its course unchecked, and not unfrequently is followed by the most brilliant results.

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EYE NOTES.

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C. H. VILAS, M.D.,

In the Office of the Librarian of Congress, at Washington.

These Eye Notes were prepared to assist in the study, and form the basis of the didactic lectures on the embraced subjects as given by the author at the Hahnemann Medical College and Hospital, Chicago. They are necessarily concise, condensed and elementary in their character, and are in no sense designed to take the place of, or in any way supersede the treatises on the subjects, but are intended to suggest the topics to be further studied, to pick out of the mass of writings the essential fundamental principles and main diagnostic points, and to suggest the line of treatment. Their cordial reception, not only by students, but by practitioners, has seemed to be sufficient reason for a publication more general than was originally intended.

The attempts to prepare an abbreviated materia medica must be always attended with hazard, and will doubtless be found incomplete. Additions of new remedies and well-authenticated symptoms will be made from time to time, and the whole enlarged and improved, may form the basis for a more pretentious work at some future time. But it is not to be expected that any one will always prescribe on local symptoms alone, but be guided by a more thorough knowledge of the remedies otherwise obtained. For their peculiar wording, the author is often alone responsible; but not only in them, but in the preparation of the diseases, all works accessible have been freely used. It is hoped this statement will serve as a full and courteous acknowledgement of the great assistance necessarily derived from many excellent publications.

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STRYCHNIA. 1. Atrophy of the optic nerve. 2. Twitchings of the lids.
3. Twitchings of the ball. 4. Spasms of the muscles. 5. Paralysis of external rectus.
6. Dilatation of the pupil from spinal irritation.

SULPHUR. 1. Pustular Keratitis. 2. Pustular conjunctivitis. 3. Troubles due to scrofula or blood-taint. 4. Pains are like pins sticking in the eye. 5. "Pains like a glass splinter in the eye."
6. Eye complaints from suppressed eruptions. 7. Ulcers and abscesses of the cornea. 8. Pterygium. 9. "Child dislikes to have its eyes washed or bathed."
10. Chronic cases complicated with other troubles.

11. Hereditary complaints. 12. Synechiæ may yield under its use. 13. "Tears which feel greasy are secreted." 14. "Gaslights seen are surrounded by a halo."

THUJA OCCID. 1. "Warts on the lids." 2. Condylomatous excrescences.
3. Tarsal tumors. 4. "Cures obstinate styes, when other remedies have failed."
5. "Episcleritis."
6. Especially indicated in syphilitic iritis. 7. Syphilitic condylomata.

ZINCUM MET. 1. "Pterygium, with great pressure across the root of the nose." 2. "Syphilitic iritis, with dull pain in the brows."

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PULSATILLA. 1. In its selection bear in mind the general characteristics, "mild, tearful," etc. 2. Tarsal tumors. 3. Mucocoele. 4. Inflammation of the meibomian and sebaceous glands. 5. Styes on the lids.

6. Aborts styes when forming. 7. Specially adapted to inflammations of lachrymal sac. 8. Discharges are generally profuse and bland. 9. Inflammation of cornea and conjunctiva, particularly superficial, when found on characteristic patient. 10. Eye diseases due to disordered digestion.

11. "Eye-complaints consequent on faulty menstruation." 12. "Conjunctivitis consequent on suppressed gonorrhœa." 13. Eye diseases better in the open air.

RHUS TOX. 1. Orbital cellulitis. 2. Great swelling of the lids, closing the eye. 3. Paralysis due to getting the feet wet, cold, etc. 4. Erysipelas of the lids. 5. "Lids swollen, tightly closed, and looking as though varnished."

6. Pains worse at night and relieved by warm applications. 7. "Suppurative inflammation of the uveal tract after cataract extraction." 8. Ulcers and pustules of the cornea, accompanied by characteristic eruption on the face. 9. Eye diseases resulting from exposure to cold, wet, etc. 10. Especially indicated in rheumatic subjects.

11. "Lids red, swollen, hot and œdematous, tears gushing out on opening them." 12. Enlargement of meibomian glands, with falling out of the cilia.

RTA GRAV. 1. Highly recommended for asthenopia not due to anomalous refraction and accommodation. 2. "Blurring of vision, letters seem to run together." 3. Aching in and over the eyes; eyes feel like balls of fire. 4. "Amblyopia due to unknown causes."

SECALE. 1. "Paralysis of the ciliary muscle." 2. "Paresis of the ciliary muscle." 3. "Asthenopia due to weakness of the ciliary muscle."

SENEGA. 1. "Promotes absorption of lens fragments after cataract operations." 2. Catarrhal conjunctivitis. 3. Weakness of the muscles.

SEPIA. 1. Eye troubles dependent on uterine complaints. 2. Aggravation of symptoms in the morning and evening; better in the middle of the day. 3. Eye troubles associated with uterine diseases. 4. Hepatic troubles sometimes associated with eye complaints.

SILICEA. 1. Especially indicated in diseases which linger with seemingly no reason. 2. Promotes tendency to absorption. 3. Especially indicated in mucocoele. 4. "Sensation of a splinter in the eye." 5. Especially indicated in inflammation of the lachrymal sac.

6. Dry scurf clings to the cilia. 7. "Small round ulcers which have a tendency to perforate." 8. Indolent, quiet ulcers with no marked symptoms. 9. Ulcers which the patient has not noticed; no troublesome symptoms apparent. 10. Valuable in removing superficial opacities from the cornea.

SPICELIA. 1. Ciliary neuralgia. 2. Ciliary neuralgia, particularly when the pains seem to start from the centre of the ball, radiate in different directions, with aggravation about 2 A. M. 3. "Constant sticking pain in the ball." 4. Pains sharp and sticking, as with a poniard. 5. "Unendurable pressive pain in the ball."

6. Pains of rheumatic and arthritic eye complaints. 7. Falling of the upper eye-lid. 8. Intolerable pain in the superciliary ridge. 9. Severe, pressing, jerking pains in the eye. 10. "When moving the muscles of the face, sensation as if the skull would burst."

SPONGIA. 1. "Exophthalmic goitre."

STAPHYSAGRIA. 1. Styes on the lids. 2. Tumors of the lids. 3. "Bursting pain in the eye-ball, temple and side of face, worse from evening to morning and upon using the eyes." 4. "Pains due to syphilis."

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LYCOPODIUM. 1. Arrests cataract due to dyspeptic troubles. 2. Of great value in eye troubles due to faulty digestion, such as styes, etc. 3. Optic nerve troubles are relieved. 4. Highly recommended for night blindness.

MACROTIN. 1. Highly recommended in hyperæsthesia of the retina.

MAGNESIA CARB. 1. Recommended for the removal of cataract.

MERCURIUS PERCIP. RUBER. 1. "Cornea superficially ulcerated with bright red vessels." 2. Bright red swellings of the conjunctiva, with granulations. 3. Intense pannus with redness, photophobia and thick discharge. 4. "Eyes burn and are inflamed."

MERCURIUS SOL. 1. Long known as a remedy for iritis. 2. "Sharp acrid discharges, making the cheek sore." 3. Symptoms all aggravated from looking into a fire. 4. Worse at night, and by artificial light. 5. Eye diseases dependent on hereditary syphilis.

6. Eye diseases caused by working over the fire, accompanied by hereditary taints. 7. "Thin acrid discharges," and "worse at night" are characteristics. 8. Excoriations of the nostrils, night sweats, etc., frequently accompany eye troubles.

MERCURIUS COR. 1. Long known as a great absorbent. 2. Serous exudations are absorbed. 3. Diseases of the uveal tract are well met. 4. Often works when other preparations of mercury will not. 5. Particularly valuable in syphilitic troubles.

6. Has characteristics of merc. sol. 7. "Retinitis albuminurica." 8. "Kerato-iritis." 9. "Blepharitis, with swollen lids, red, excoriated by acrid lachrymation." 10. Iritis, especially when dependent on syphilis.

11. Eye complaints associated with enlarged glands.

MERCURIUS PROT. 1. Diphtheritic conjunctivitis. 2. Eye-complaints accompanied by a thick, yellow coating at the base of the tongue.

NATRUM MURIATICUM. 1. Useful after the abuse of caustics. 2. "Muscular asthenopia, with drawing stiff sensation in the muscles of the eyes upon moving them." 3. "Entropion from abuse of caustics." 4. Itching of the inner canthus. 5. Irritability of the margins of the lids, with redness.

6. Catarrhal affections of the lids.

NITRIC ACID. 1. Especially useful after the abuse of mercury. 2. Diseases of the eye due to syphilis. 3. "Scrofulous ophthalmia." 4. "Gonorrhoeal ophthalmia." 5. "Eyelids swollen, hard and livid, with a copious yellow discharge running down the cheeks."

NUX VOMICA. 1. Atrophy of the optic nerve. 2. "Blurring of sight from over-heating." 3. "Useful where patient has been much drugged previous to eye attacks." 4. Often indicated from over-drugging in old-school practice. 5. Eye troubles, especially amblyopia, caused by the abuse of stimulants.

6. Ciliary blepharitis, with morning aggravation. 7. Nervous irritations. 8. Specially adapted to the colored race. 9. Retinal hyperæsthesia.

PHOSPHORUS. 1. Amaurosis, paralysis or paresis of muscles due to sexual excesses. 2. Dimness of vision due to sexual weakness. 3. Muscular asthenopia. 4. Diseases of retina and choroid. 5. "Photopsias and chromopsias of various forms and colors."

PHYSOSTIGMA VENENOSUM. 1. Twitching of the lids. 2. "Irritation of the fundus of the eye due to myopia." 3. Irritation of the fundus of the eye due to posterior staphyloma. 4. Spasm of the accommodation.

PRUNUS SPINOSA. 1. Ciliary neuralgia, pains not well marked. 2. Sharp piercing pains, sometimes commencing behind the ears, and shooting forward toward the eye. 3. Pain as if the ball were wrenched or crushed. 4. Arrests deep-seated inflammation of sclera and choroid.

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HEPAR SULPHUR. 1. Ulcerations of the cornea. 2. Sloughing of the cornea. 3. Absorbs pus in the anterior chamber. 4. Obscuration of vision while reading. 5. "Acute phlegmonous inflammation of the lids, with tendency to suppuration."

6. Suppurative keratitis. 7. "Pains are aggravated by cold and relieved by warmth." 8. Lids very sensitive to touch, with throbbing, aching, stinging pain. 9. Great tendency to suppuration. 10. "Redness and swelling of upper lid, with pain."

11. Abscesses of the lids. 12. Abscesses of the cornea. 13. Mucocoele. 14. Orbital cellulitis after suppuration has set in. 15. Pustular conjunctivitis of strumous origin.

16. "Eczema of the lids, large heavy scabs form after sleeping." 17. Lids swollen, spasmodically closed and very sensitive to the touch. 18. Ulcerations of external parts of the eye, which bleed easily and are very sensitive to the touch. 19. Photophobia is usually a prominent symptom. 20. "Lids red, swollen and bleed easily on opening."

21. "Boring pain in roof of orbits." 22. The lids are stuck together in the morning. 23. Pressive pain in the eyes and through the head.

HYDRASTIS CAN. 1. Lids completely stuck together. 2. Burning sensation in lachrymal duct.

HYOSCYAMUS NIGER. 1. Distortion of the eyes; squinting. 2. Small objects seem very large. 3. It seems as though a veil were before the eyes. 4. "Deceptive vision, the flame of the light seems smaller, that of another larger; though both are of equal size." 5. Extreme dilatation of the pupils, which are insensible to the light.

IGNATIA AMARA. 1. "Zig-zag and serpentine flickering white light at one side of the field of vision." 2. "In the evening on reading, it seems dim before the eye, as from tears to wipe away, but there are none." 3. Glaucomatous neuroses dependent on grief. 4. Emotional eye diseases. 5. "The blue veins in the upper lid are often a good guide."

KALI BICHROMICUM. 1. "Ulcers and pustules on the cornea, with surrounding indolent inflammation." 2. The corneal troubles are dormant, presenting little or no redness or photophobia. 3. Secretions are of a stringy character. 4. Inflammations, with yellow discharge and morning agglutination. 5. Violent shooting pains from the root of the nose along the left orbital arch to the external angle of the eye. 6. Opacities of the cornea.

KALI JOD. 1. Pustules on the conjunctiva. 2. Pustules on the cornea. 3. Clears up corneal opacities. 4. Syphilitic iritis after the use or abuse of mercury. 5. Paralysis of muscles dependent on syphilis.

6. Obscure troubles of the eye dependent on syphilis. 7. Internal eye inflammation consequent on syphilis. 8. Long known as an important remedy in choroiditis, and acute or chronic irido-choroiditis. 9. "Vision dim and foggy."

LACHESIS. 1. "Retinitis apoplectica." 2. "Hastens absorption of blood into the retina." 3. "Much black flickering before the eyes." 4. Stitches as from knives in the eye, coming from the head. 5. "Inflammations of the eye, with raging, dull, stitching, tearing, jerking pains in the teeth, extending through the upper jaw to the ear."

6. Terrible pains in the eye, with sharp pains in the teeth and upper jaw, the patient complaining of suffocative feelings. 7. Pains rapidly change from the eye to other parts of the body and back again. 8. Scrofulous keratitis, worse in the morning and after sleeping. 9. Eye complaints worse after sleeping.

LILIUM TIG. 1. Weakness of ciliary muscle. 2. "Weak vision due to anomalous accommodation and refraction." 3. Increase of hypermetropia. 4. "Asthenopia due to ametropia."

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GRANULAR CONJUNCTIVITIS.

Synonyms: Trachoma; Granular Lids; Ophthalmia Granulosa.

CHIEF CAUSES. Catarrhal and Purulent Conjunctivitis. Filth, impure air, and defective hygiene generally. Contagion.

SYMPTOMS. Locally this trouble is characterized by hyperæmia, swelling, and a peculiar roughness of the palpebral conjunctiva. These changes may be noticed as diffuse, vascular excrescences in the conjunctival tissue, resembling roundish granules; or as hypertrophied papillæ. Former called "granular trachoma;" latter, "papillary trachoma;" occurring together, as they most often do, "mixed trachoma." There may be a discharge, at first thin and watery, gradually becoming thicker and of a muco-purulent character; or the disease may steal on so insidiously as to be established before really suspected. In latter case patient generally previously complains of the lids sticking together in the morning, with some roughness. When either acute, or established, the eyes are very irritable, accompanied by a sensation of sand, especially under the upper lid, and they become red and watery on attempting to use them. After a short time the lids become puffy, more or less flabby, and limp.

Nearly always, however, general complaints accompany, or have originated this trouble. Particularly associated with the badly nourished; with high free livers, who crowd their stomachs, drink hot, stimulating drinks, remain in smoky rooms, or heated, close atmosphere, and take insufficient exercise.

All symptoms vary greatly in severity according to the nature of the attack.

NOTE. Granular conjunctivitis is contagious: often highly so. *Caution*—Isolate all towels, utensils, etc. Shows great tendency to relapses, acute exacerbations being common. Often complicated with other diseases. The greatest danger lies in the injury to the cornea. The rough, sand-paper-like lids irritate the cornea, promoting vascularity and pannus, or it may ulcerate. Conjunctiva may become chronically dry (xerophthalmia), lids be drawn inwards at the margin (entropion), lashes turn in (trichiasis), or lid or lids become firmly adherent to the globe (symblepharon). Either of the latter more likely to be the result of injudicious treatment, however. Mind apt to partake of the bodily weakness in old advanced cases, and patient become addicted to lazy, indolent habits.

LOCAL TREATMENT is all important. Injudiciously done, it does harm rather than good. In severe cases astringents are necessary, caustics seldom are. Primary cases and exacerbations are better met by remedies. Ice-bags in severe, acute attacks, or exacerbations of old chronic ones are highly recommended. Crayon of copper sulphate is to be used only by the most experienced, if at all. Tannic acid, six to ten grains, and glycerine, one ounce, also highly recommended. Silver nitrate, which see, properly used, is the most reliable irritant, however.

GENERAL TREATMENT. Removal of all exciting causes; cold-water general bathing, with friction; good food, air, and exercise, and healthy, useful employment are all essential.

REMEDIES. Aconite, Alumina, Argentum nit., Arsenicum alb., Aurum, Belladonna, Euphrasia, Mercurius, Natrum mur., Nux vomica, Pulsatilla, Sulphur.

PUSTULAR CONJUNCTIVITIS.

Synonyms: Herpes Ophthalmicus; Phlyctenular Conjunctivitis.

CHARACTERIZED by small, yellowish-red nodules on the conjunctiva; often associated with, and in many respects similar to, pustular keratitis, which see.

TREATMENT. Same as indicated under Pustular Keratitis.

REMEDIES. See Suppurative Keratitis.

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SUPPURATIVE KERATITIS.

CHARACTERIZED by the inflammatory infiltration becoming changed into pus, and appearing as a yellow opacity in the corneal tissue. It may be limited, or the entire cornea become a yellow necrosed mass.

CHIEF CAUSES are the same as in the other forms. Corneal incisions in the old or feeble. Often following in corneal cataract operations, especially when the cornea has been bruised. Severe forms of conjunctivitis. Paralysis of fifth pair of nerves, rendering cornea anaesthetic, and retarding nutrition.

NOTE. An abscess is suppuration enclosed by corneal tissue; an ulcer is formed by an abscess opening. Ulcers also occur superficially without previous abscess, and vary in form, size and depth. Keratocele (hernia of the cornea) is formed by ulcer penetrating to third lamina (Descemet's membrane) of the cornea, when latter bulges forward filled with aqueous humor from intra-ocular pressure, and generally perforates.

When pus sinks between the plates of the cornea, it is called onyx (or unguis); when found in the anterior chamber, hypopion. Both may exist at same time. May absorb, or require to be evacuated.

Ulcers may close up, leaving only slight superficial opacities or no result of inflammation, or may burst through suddenly carrying with the rush of humor the iris, which becoming entangled in the wound in the process of healing forms an anterior synechia; or if opening be large, iris may bulge through and adhering around its margin form a staphyloma. Either of these accidents, and especially the last, are dangerous in that they may lead up to sympathetic iridocyclitis, which see. The relation of the parts becomes greatly changed also, even though temporarily, in these accidents; and when, if such happens, they return to their positions, they may be greatly damaged. Anterior lens capsule may be cataractous.

When the suppuration be attended with little or no irritation and no vessels, it is especially dangerous, the cornea rapidly dying. Prognosis more or less favorable, according as ulcer is superficial or deep-seated.

LOCAL TREATMENT. In beginning atropine and rest. Later, and not too late, reduce the intra-ocular tension by paracentesis or iridectomy. Large ulcers should not be allowed to burst, but paracentesis be performed through their base. Pus need not be evacuated except in hypopion, seldom then. Remedies will control these troubles. Saemische's operation. Protective bandage in the neuro-paralytic form.

GENERAL TREATMENT is all-important. Disease produces great drain on the system. Careful diet and all tonic influences.

REMEDIES. Aconite, Apis mel., Argentum nit., Arnica, Arsenicum alb., Aurum met., Calcarea carb., China, Conium mac., Euphrasia, Graphites, Hepar sulph., Kali bichrom., Merc. sol., Merc. dulc., Merc. prot., Natrum mur., Nux vom., Rhus tox., Silicea, Sulphur.

VASCULAR KERATITIS.

CHARACTERIZED by gray opacity of, and development of vessels on the roughened surface of the cornea.

NOTE. The loss of the epithelium, which may ensue, causes great pain from the exposure of the nerves.

LOCAL TREATMENT. Protection and rest of eyes, and atropine. Perhaps cold applications. Canthoplasty sometimes necessary.

REMEDIES. See Suppurative Keratitis.

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DISEASES

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INTERSTITIAL KERATITIS.

Synonyms : Diffuse Keratitis. Parenchymatous Keratitis.

CHARACTERIZED by moderate infiltration of the cornea with an opaque grayish or yellowish-white product, generally beginning at the margin and advancing toward the centre, causing swelling and diffuse cloudiness. Infiltration shows little inclination to break down, and usually collects in extensive, cloudy and distinctly-marked spots. These opacities may vary all the way from slight diffuse cloudiness to density, the cornea then looking like ground glass.

NOTE. The surface may, but usually does not, retain its smooth appearance. Epithelium generally lost, vessels appearing on the surface. Often found with hereditary syphilis, when there are also present the peculiar notched teeth, upper central incisors, permanent set, and the peculiar physiognomy. Disease apt to be very tedious, but may recover. Cornea in rare cases is so covered with vessels as to look red, like an extravasation of blood.

LOCAL TREATMENT. Atropine at times does well, other times seems to injure; much benefit often from daturine, when atropine does not do well. Protection and rest of eyes.

REMEDIES. See Suppurative Keratitis.

DIPHTHERITIC CONJUNCTIVITIS.

CHIEF CAUSES. Occurs in course of diphtheria, and results from same causes as do the other forms.

SYMPTOMS. A yellow, tough and firm product of inflammation, collects in the tissue of the conjunctiva and on its surface, from which it may often be torn off like a thick lining of the lids. There are usually the symptoms of intense inflammation in the first stages, with great tenderness to the touch, the lids being hardened by fibrinous infiltration. Symptoms vary much in nature according to the severity of the case, but generally are severe at first; the lids grow soft as the disease advances, and pus supervenes.

NOTE. This disease is extremely rare in the United States. Lids are often rigid and seemingly fibrinous in the other varieties, and errors in diagnosis made. Found mainly on the Continent. Cornea apt to suffer severely, and the lids to become cicatrized. Constitutional symptoms usually marked.

TREATMENT. The treatment is not very satisfactory. Locally ice compresses in first stages, and the treatment of purulent conjunctivitis when pus sets in. Support the strength.

PTERYGIUM.

CHIEF CAUSES. Exposure to hot winds, to the winds of the sea, of the prairies, etc. Chronic inflammations.

SYMPTOMS. A triangular vascular ridge of hypertrophied conjunctival and subconjunctival tissue, usually on the nasal side of the eye, base towards the canthus, apex adjacent to, or more or less on the cornea.

LOCAL TREATMENT. If remedies are unavailing and it persistently encroaches on the cornea, excision, ligation or transplantation.

REMEDIES. Argentum nit., Arsenicum alb., Calc. carb., Sulphur, Zincum.

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IRITIS.

Synonym: Inflammation of the Iris.

CHIEF CAUSES. Exposure, rheumatism, syphilis, injuries and extension of inflammation from other parts.

SYMPTOMS more or less attendant on all varieties.

1. Changes in color and texture of the iris (light iris becomes greenish; dark, brownish-red.)
2. Alteration in form and mobility of the pupil; iris sluggish.
3. Suffusion of conjunctiva: and zone of vessels around corneo-scleral junction, (which may be red, blue or brown.)
4. Pain, variable, (may be absent).
5. Photophobia and lachrymation.
6. Vision always impaired, (should be accurately tested).

Classification arbitrary, but for convenience divided into

1. Simple or plastic, characterized by plastic exudation. Synechiæ may be found after atropine is used, if not before.
2. Serous, characterized by hyper-secretion of the aqueous humor. Less tendency to synechiæ. Tension increased. Pupil dilated.
3. Parenchymatous or suppurative, characterized by well-defined nodular masses, which are reddish-brown at first, then yellowish. They are absorbed, or suppurate causing hypopion, (pus in the anterior chamber.)

NOTE. Neither syphilitic, rheumatic or gonorrhoeal iritis have distinctive forms, though the former is often parenchymatous. When the circumference of the pupil is wholly adherent to the anterior capsule of the lens, the condition is called exclusion of the pupil; when area of pupil is encroached on by exudation, called occlusion of pupil. Contraction of field of vision is due to mechanical obstruction. Adhesions of iris to lens capsule or cornea are called posterior or anterior synechiæ, respectively. The various forms are often far from distinct: each may run into or be combined with another form.

Serous iritis is an insidious disease, the symptoms are often quite dull, and the disease creeps on unawares.

LOCAL TREATMENT. In all forms, perfect rest of the iris and eye. Best secured by atropine and the protective bandage. A drop of a solution of the former, of the strength of from two to four grains to the ounce should be instilled at intervals of a few minutes until dilatation of pupil is secured, and then several times a day. It may even be necessary to use solutions of atropine of strength of six to eight grains to the ounce, but with great caution. Full dilatation of the pupil is best guide, and in most cases, essential to success. Atropine should be continued some days after all inflammation has apparently subsided. In serous iritis, a paracentesis of the cornea should be early performed, unless atropine and hot applications relieve early. Great harm is often done to the delicate parts of the eye by dilatory treatment. Hypopion is well met by remedies, and seldom requires to be evacuated. In the parenchymatous form, anterior synechiæ may form and require to be broken up. Corelysis properly done is sometimes the best operation; improperly done often sets up violent internal eye inflammations. Iridectomy is often a necessity in serous iritis of a severe type; may be required in severe parenchymatous iritis due to syphilis; extremely seldom required in the plastic form if properly treated in the beginning. Old, badly-treated, chronic cases may require it. Sometimes when there is great intra-ocular pressure, atropine will not work until the pressure be relieved by paracentesis or otherwise.

Caution. Use no nitrate of silver in iritis.

GENERAL TREATMENT. Quiet the pain. Keep down complications. Induce sleep.

REMEDIES. Aconite, Arsenicum, Asafœtida, Aurum, Bryonia, Cannabis, Clematis, Gelsemium, Hepar sul., Kali iod., Mercurius, Rhus tox., Spigelia, Thuja.

Dr. C. H. VILAS' EYE NOTES.

COMPLETE IN THREE PARTS.

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These Notes were prepared to assist in the study, and form the basis of the didactic lectures on the embraced subjects as given by the author at the Hahnemann Medical College and Hospital, Chicago. They are necessarily concise, condensed and elementary in their character, and are intended to pick out of the mass of writings the essential fundamental principles and diagnostic points, and to suggest the treatment.

The attempts to prepare an abbreviated materia medica must be always attended with hazard, and will doubtless be found incomplete. Additions of new remedies and well-authenticated symptoms will be made from time to time, and the whole enlarged and improved, may form the basis for a more pretentious work at some future time. But it is not to be expected that any one will always prescribe on local symptoms alone, but be guided by a more thorough knowledge of the remedies otherwise obtained. For their peculiar wording, the author is often alone responsible; but not only in them, but in the preparation of the diseases, all works accessible have been freely used. It is hoped this statement will serve as a full and courteous acknowledgement of the assistance necessarily derived from many excellent publications.

To facilitate a ready distinction between the Eye- and the Ear-Notes, the latter are printed on colored paper.

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LOCAL APPLICATIONS.

SILVER NITRATE (Synonym: Nitrate of Silver), is an invaluable local as well as general remedy in eye complaints. It is readily neutralized in all strengths by a saturated solution of sodium chloride (common table-salt). The chlorine of the sodium unites with the silver forming silver chloride, which is insoluble, and consequently innocuous, in the tears. Used as follows:

Ophthalmia Neonatorum. A strength of one or two grains to the ounce of pure distilled water should be used, a drop into the thoroughly-cleansed eye once or twice a day. Combined with it internally, 6x or 30x trituration preferred, it will prove an unfailing remedy.

Granular Conjunctivitis. It may be necessary to use it. Preferably, paint on the everted upper lid a solution of five grains to the ounce of distilled water, quickly neutralizing it with sodium chloride, as above. To be seldom repeated. Bear in mind that it is not thus used for its caustic effect, but as an irritant and stimulant to promote absorption, and used excessively in quantity or frequency, it does harm. Let the improvement go on to completion before another application is made, previous to which gently remove the eschar.

Purulent Conjunctivitis. Strength of three to ten grains to the ounce, according to severity of case. Many use a solution of two to six grains to the ounce of distilled water, and put a drop in the eye three or four times a day. Solutions of five grains and upwards are preferably painted on the everted upper lid, and neutralized or not, according to experienced judgment. It should never be used until the discharge has set in, or it will be highly injurious. Having used it, wait until the deposit which forms on the conjunctiva has disappeared and the discharge has become re-established before again using it. If this rule be attended to, there will be little danger from its use.

COPPER SULPHATE, ZINC SULPHATE AND ZINC CHLORIDE

are also much used in mild forms of conjunctivitis. Properly used, there is often much benefit. Injudiciously used, there is occasionally considerable harm. One or two grains of either of the former, or a half grain to one grain of the latter, to the ounce of distilled water, is of the ordinary strength. Their strength may be increased if necessary.

HYOSCYAMINE, the alkaloid of *hyoscyamus niger*, is a mydriatic sometimes used. It can often be borne when atropine cannot. Under its use the pupil will dilate more rapidly and remain longer dilated than under atropine, and of not less maximum degree; but it is much more expensive, more difficult to procure and does not keep as well.

DUBOISINE, the active principle of *duboisia myoporoides*, is much similar to atropine in its general action, though far more powerful. It dilates the pupil and paralyzes the ciliary muscle more rapidly and efficiently than atropine; has no unpleasant action on the conjunctiva, but frequently produces the most distressing vertigo. Its high price renders it only a substitute where atropine distresses.

DATURINE, the alkaloid of *datura stramonium*, is also sometimes used as a mydriatic. It can be borne when atropine can not, and may thus be sometimes useful.

CALABAR BEAN, an extract of the product of *physostigma venenosum*, is the myositic generally used in ophthalmic practice. Its active alkaloid, eserine (or physostigmine,) is also much used. A drop of a solution of four grains of the alcoholic extract of the former to an ounce of distilled water, or a little of the alcoholic extract, is put into the eye. Its effect is rapid, but soon passes off, or is easily overcome by atropine.

Caution.—Beware of spurious or imitation alkaloids of all these substances.

Dr. C. H. VILAS'
EYE NOTES.



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DISEASES OF THE LIDS.

ECTROPION is an eversion of the lid, exposing the conjunctival surface. *Entropion* is an inversion of the lid, by which the edge of the lid or the covering integument is in contact with the globe. *Ptosis* is a drooping of the upper lid, either wholly or in part; may be caused by paralysis of third nerve, injury of levator muscle, or swelling and increased weight of the lid from inflammation. *Trichiasis* is an inversion of the cilia, so that they rub on the globe. *Distichiasis* is a similar affection, except that there appears to be a double row of cilia.

NOTE. The lids are subject to the same diseases as the other parts of the general integument, such as eczema, cancer, erysipelas, ecchymosis, abscess, acne, warts, naevi, etc., and require same treatment as when occurring in other parts, except that it must always be borne in mind that the danger from resultant cicatrices and inflammatory action generally is very great, and often entails irremediable injury which, from similar inflammation, could elsewhere be disregarded.

TREATMENT. For the radical cure of these deformities, when present in an aggravated degree, an operation is necessary as a rule. Many cases of minor degree, and sometimes of a more serious character, are cured by the appropriate remedy combined with simpler treatment, however. Temporary relief from the latter two may be had by pulling out—*epilation*—the offending lashes.

Require an exhaustive knowledge of their causes, etc.

BLEPHARITIS CILIARIS.

Synonyms: Blepharitis marginalis; Tinea Tarsi; Ophthalmia Tarsi; Lippitudo; Inflammation of the Edge of the Lid.

CHIEF CAUSES. Exposure to irritating influences; general debility; filth; anomalous refraction; occurs during course of other inflammations.

SYMPTOMS. If seen early, edge of lid is hyperæmic; soon becomes swollen, shiny and smooth. Little pustules appear about the roots of the lashes, leaving often small ulcerations and fissures. The discharges aggregate into small yellow scabs, sticking the lashes together.

NOTE. This is frequently an obstinate and recurrent disease. If it progresses to a great extent, the lashes often fall out and leave the lid bald—*madarosis*—which becomes hard and calloused—*tylosis*.

LOCAL TREATMENT. Absolute cleanliness of the edge of the lid. The scabs should be gently soaked off (not torn off) with warm water, or warm milk and water, several times daily, and a little pure cosmoline rubbed on the cleansed and dried margin. A silver nitrate solution may be advantageously used. If at fault, it is all-essential to correct the refraction by suitable lenses.

REMEDIES. Aconite, Alumina, Apis mel., Arsenicum, Graphites, Hepar sulph., Mercurius, Natrum mur., Pulsatilla, Silicea, Sulphur.

TUMORS.

HORDEOLUM. Synonym, Sty. Is a boil affecting connective tissue near the margin of the lid. Treatment consists in proper remedy internally—pulsatilla or staphysagria usually—but if not seen in time, encourage suppuration with hot fomentations externally, silicea internally, and evacuate the resultant pus.

CHALAZION. A tumor usually about the size of a pea, caused by obstruction of the orifice of a sebaceous gland and consequent retention of secretion. Located in cartilage, nearest conjunctival covering, skin over same freely movable and natural in color. Usually several at a time or recurrent. Filled with pus or fatty material, according as inflammation has or has not set in. Treatment consists in evacuating contents and causing the sac to adhere by artificially excited inflammation.

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LOCAL APPLICATIONS.

ATROPINE, the alkaloid of *atropa belladonna*, is the principal mydriatic used in ophthalmic practice. It is insoluble in water, and if ordered must be cut by an acid. Hence we use atropia sulphate, or atropine treated by sulphuric acid, which is freely soluble in water. It is important that it be well prepared or there will be attributed to the atropia unfavorable results due to other causes.

Pure, neutral atropia sulphate has the following advantages, when rightly used:

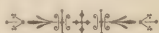
1. It diminishes the intra-ocular tension.
2. It draws back the iris, and
 - (a) prevents adhesions to the anterior capsule of the lens;
 - (b) prevents adhesions to the posterior layer of the cornea;
 - (c) tears away adhesions when formed;
 - (d) prevents its prolapse;
 - (e) not infrequently restores it when prolapsed;
 - (f) compels it to rest;
 - (g) diminishes its congestion.
3. It diminishes the congestion of the ciliary body.
4. It compels the ciliary muscle to rest.
5. It lessens ciliary neuralgia.
6. It acts as a local anæsthetic during its passage through the cornea, allaying irritation.

It also has disadvantages, as follows:

1. Severe irritation of the conjunctiva with an eczematous condition of the lids, has been caused by its use.
2. Its use is contra-indicated when the posterior uveal tract is affected or likely to be.
3. By its use acute glaucoma has been hastened in eyes already attacked, by reason of which, the advantage above numbered 1 has been doubted in some cases.
4. Its use may cause detachment of the retina.
5. Paralysis of the fibres of the iris may be caused by prolonged use of a strong solution.
6. Poisoning by the solution running from the conjunctival sac into the throat through the lachrymal canaliculi may occur; or it may even be absorbed to this extent.
7. Some persons show a constitutional antipathy to its use in other ways than mentioned.

Its strength may be varied according to the necessities of the case. Being an active poison great care is essential. One-half a grain of atropia sulphate to an ounce of distilled water is sufficient to dilate the pupil for examination of an healthy eye, but when inflammation is present, solutions of two to eight grains to the ounce are required—one drop from a drop-tube, to be placed in the eye, the lower lid being slightly everted.

THE ANTIDOTE to atropine is preferably a strong decoction of coffee, which in cases requiring a more powerful antidote is best alternated with hot vinegar. When an immediate antidote is required, however, a hypodermic injection of morphia is essential, and excels all others.



COSMOLINE is valuable in all cases of ciliary blepharitis, preventing the formation of new scales, acting as a demulcent, and perhaps through absorption exercising some medicinal influence over the progress of the disease. It is to be preferred pure and uncombined with carbolic acid or any thing else. Vaseline, cloverine, etc., are names of substitutes said to be similar in preparation.

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DACRYO-CYSTITIS.

Synonyms: Abscess of the Sac; Acute Inflammation of the Lachrymal Sac.

CHIEF CAUSES. Chronic disease of tear passages; nasal catarrh; conjunctivitis; injury; exposure.

SYMPTOMS. Tenderness, redness and puffy swelling over the region of the sac and lids, accompanied by great pain. When disease is not arrested the abscess bursts through the skin.

NOTE. The abscess should not be allowed to burst externally, as this forms a *fistula lachrymalis*, which is often exceedingly difficult to cure. When such happens, the natural course of the discharge being established, we must heal the fistula by stimulating its edges; if they have become covered with skin, pare the edges and unite with a stitch.

LOCAL TREATMENT. Open up the canaliculus to let pus out that way, and keep it open with probes. If the skin over the abscess is in imminent danger of bursting it is better to open the abscess with a knife than allow it to burst; then apply hot lotions and encourage suppuration. As soon as possible heal up the fistula and get the pus through the opened canaliculus. Ice-water lotions and indicated remedy will often cut short an attack if used in the beginning.

REMEDIES. See Blenorrhœa of the Sac.

BLENORRHŒA OF THE SAC.

Synonyms: Mucocœle; Chronic Inflammation of the Lachrymal Sac.

CHIEF CAUSES. Same as Dacryo-cystitis. Faulty position of the puncta.

SYMPTOMS. Constant irritability and watering of the eye; variable swelling of the sac which, on pressure, discharges pus.

NOTE. Mucocœle has associated with it many troubles, which are also sometimes independent. Strictures of the lachrymal duct are very common, and must be cured by operation or treatment before this affection can be overcome. This trouble is generally of tedious recovery, and if mal-treated seldom gets well. In exceptional cases, after all other treatment has failed, the sac must be obliterated. Inasmuch as syphilis plays an important part in all lachrymal troubles, its presence must be suspected.

LOCAL TREATMENT. First, the passages must be opened and kept free by probing or otherwise. In this great delicacy must be observed. Great harm usually is done from too much force and senseless wrenching. Astringent injections may then be made with benefit.

REMEDIES. Aconite, Argentum nit., Euphrasia, Hepar sul., Pulsatilla, Silicea.

IRIDO-CHOROIDITIS.

CAUSE. Extension of inflammation from the iris, and *vice versa*.

SYMPTOMS. Those of iritis mainly, but exaggerated in degree. The vitreous becomes clouded, and there is contraction of the field of vision not explained by iritis.

NOTE. Is most frequent result of previous oft-recurring iritis, where the chambers of the eye have become separated (exclusion, or occlusion of the pupil) or the iris is dragged on by synechiæ. Eye often lost by the disease, and sympathetic ophthalmia may result and the companion eye be endangered or lost.

LOCAL TREATMENT. Occurring with iritis requires same treatment as that disease. Iridectomy most valuable remedy for severe cases. Corelysis.

REMEDIES. See Iritis and Choroiditis.

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REFRACTION AND ACCOMMODATION (3).

HYPERMETROPIA.

Synonyms: Over-sight; H.

DEFINITION. When the accommodation is at rest, and parallel rays of light entering the eye are focussed *behind* the retina, the condition is called hypermetropia. Convergent rays are focussed upon the retina.

CAUSES. Optic axis too short; senile changes in the eye; aphakia, or absence of the lens. Too low refractive power. May be congenital and hereditary.

NOTE. In hypermetropia the eye cannot see distant objects without using a certain amount of the accommodation, or what is the same thing, a convex lens; in emmetropia no accommodation is used for distant objects, the refraction alone sufficing. This abnormal use of the accommodation overtasks the eye, causing spasm of the ciliary muscle, strabismus, etc. *Latent* H, or H_l, is that which is habitually concealed and only revealed by the use of a strong mydriatic; *manifest* H, or H_m, is that which is present without the use of a mydriatic. The latter is represented by the strongest convex lens through which the patient sees distant objects most acutely; the *total* H, by the strongest convex lens through which the patient sees distant objects most acutely after a strong mydriatic has acted; the difference between the two represents the *latent*.

Of late years H has been greatly elucidated, and strabismus, blepharitis, many so-called scrofulous troubles, etc., been found to originate therein.

H is divided into three kinds: *facultative*, that in which patient sees near and far objects clearly with or without convex lenses; *relative*, in which patient sees near and far objects clearly, but only by converging visual lines to points nearer than the objects, giving the eyes a periodic squint; *absolute*, in which neither near or far objects can be seen clearly without convex lenses.

(In examining patients, it should be borne in mind that the two eyes will often be found to differ greatly, either in grade or kind of defect. One eye may be M and the other H, or one eye E and the other H or M, forming *anisometropia*, or one highly myopic and the other slightly, *anisometropic myopia*; or similarly hypermetropic, *anisometropic hypermetropia*; or one with Amh and the other M + Am; or Ahm and Amh, etc., etc.)

H may be diagnosed by the ophthalmoscope, with which the details of the fundus may be seen some distance away; carrying the ophthalmoscope to one side the fundus moves in the same direction. On nearer approach a convex glass will be required to get a clear erect image. By indirect method, the details of the fundus look larger than in an emmetropic eye.

TREATMENT. Correct the refraction by suitable convex spherical lenses.

PRESBYOPIA.

Synonyms: Far-sight; Old sight; Pr.

DEFINITION. Presbyopia is the term applied to the diminished range of accommodation consequent on age. It consists in a recession of the near point.

CAUSES. Still in dispute. Increasing hardness of lens. Perhaps flattening of the cornea.

NOTE. The recession of the near point begins in youth in all eyes and gradually advances, but does not become inconvenient until about the fortieth year. First noticed by inability to see small objects as near as formerly; they must be put farther away, especially in the evening. It should be remembered that distant vision remains unimpaired. Hypermetropic eyes are affected earlier; myopic later, and occasionally not at all. It is wrong to delay the use of lenses when needed; they should be given as soon as the affection becomes inconvenient.

TREATMENT. Correct the presbyopia by convex spherical lenses.

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REFRACTION AND ACCOMMODATION (3).

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Synonyms: Over-sight; H.

DEFINITION. When the accommodation is at rest, and parallel rays of light entering the eye are focussed *behind* the retina, the condition is called hypermetropia. Convergent rays are focussed upon the retina.

CAUSES. Optic axis too short; senile changes in the eye; aphakia, or absence of the lens. Too low refractive power. May be congenital and hereditary.

NOTE. In hypermetropia the eye cannot see distant objects without using a certain amount of the accommodation, or what is the same thing, a convex lens; in emmetropia no accommodation is used for distant objects, the refraction alone sufficing. This abnormal use of the accommodation overtasks the eye, causing spasm of the ciliary muscle, strabismus, etc. *Latent* H, or H_l, is that which is habitually concealed and only revealed by the use of a strong mydriatic; *manifest* H, or H_m, is that which is present without the use of a mydriatic. The latter is represented by the strongest convex lens through which the patient sees distant objects most acutely; the *total* H, by the strongest convex lens through which the patient sees distant objects most acutely after a strong mydriatic has acted; the difference between the two represents the *latent*.

Of late years H has been greatly elucidated, and strabismus, blepharitis, many so-called serofulous troubles, etc., been found to originate therein.

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H may be diagnosed by the ophthalmoscope, with which the details of the fundus may be seen some distance away; carrying the ophthalmoscope to one side the fundus moves in the same direction. On nearer approach a convex glass will be required to get a clear erect image. By indirect method, the details of the fundus look larger than in an emmetropic eye.

TREATMENT. Correct the refraction by suitable convex spherical lenses.

PRESBYOPIA.

Synonyms: Far-sight; Old sight; Pr.

DEFINITION. Presbyopia is the term applied to the diminished range of accommodation consequent on age. It consists in a recession of the near point.

CAUSES. Still in dispute. Increasing hardness of lens. Perhaps flattening of the cornea.

NOTE. The recession of the near point begins in youth in all eyes and gradually advances, but does not become inconvenient until about the fortieth year. First noticed by inability to see small objects as near as formerly; they must be put farther away, especially in the evening. It should be remembered that distant vision remains unimpaired. Hypermetropic eyes are affected earlier; myopic later, and occasionally not at all. It is wrong to delay the use of lenses when needed; they should be given as soon as the affection becomes inconvenient.

TREATMENT. Correct the presbyopia by convex spherical lenses.

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REFRACTION AND ACCOMMODATION (2).

MYOPIA.

Synonyms: Hypometropia; Brachymetropia; Short-sight; M.

DEFINITION. When the accommodation is at rest, and parallel rays of light entering the eye are focussed *in front* of the retina, the condition is called myopia. Divergent rays are focussed upon the retina.

CAUSES. Optic axis too long; too high refractive power. Often hereditary or congenital. Anything that favors congestion of the globe, as straining the eyes at fine work; reading by too dim a light; reading in a recumbent posture; stooping over at the desk, etc.

NOTE. In myopia the far point lies nearer the eye than in emmetropia.

A myopic eye is often considered as necessarily of strong sight, and hence not regarded as unsound. This is erroneous. While a stationary myopia of low degree may not necessarily be a serious matter, it must always be regarded as liable at any time to become progressive; a progressive myopia of high or low degree is a serious matter. One of high degree, accompanied by posterior staphyloma, is dangerous to vision in advanced life, always affecting the vision more or less; one of high degree accompanied by posterior staphyloma (synonyms; myopic arc; myopic crescent) and attendant atrophy of the optic nerve, not infrequently ends in blindness. The latter grades are nearly always attended by asthenopia, much irritation, and amblyopia.

Myopia is often confounded with spasm of the ciliary muscle, and the latter diagnosed as myopia. Spasm of the ciliary muscle is curable by medicines; myopia is not. The two may be associated; the spasm may be overlooked and an improvement of the myopia supposed to be accomplished.

Myopia may be diagnosed by the ophthalmoscope, in which case the details of the fundus can be seen by direct method a short distance away; carrying the ophthalmoscope to one side, the fundus is seen to move in the opposite direction. On nearer approach a concave glass will be required to get a clear erect image. By the indirect method the details of the fundus seem smaller than in an emmetropic eye.

The distance of the far point determines the degree of myopia. A patient who does not see clearly beyond 32 inches is said to have M 1-32; beyond 12 inches, M 1-12, etc.

A stationary myopia through youth has a compensation in that presbyopia does not affect it until the error due to myopia is overcome by the senile change.

TREATMENT. The myopia must be neutralized by concave spherical lenses; generally the weakest that can be worn. Other associated troubles to be treated as indicated.

LENSES.

DEFINITION. The term lens is now given to all transparent masses terminating at least on one side by a spherical, cylindrical, or prismatic surface.

NOTE. In ophthalmic practice two forms of lenses are used, spherical and cylindrical. A *spherical* lens is a segment of a sphere; a *cylindrical*, the segment of a cylinder. A third form is sometimes used called a *prismatic* lens. There are six kinds of spherical lenses used, plano-convex, bi-convex, positive or concavo-convex meniscus, plano-concave, bi-concave and negative or convexo-concave meniscus. Convex lenses are called *positive* and designated by the sign +; concave lenses are called minus and designated by the sign -. When not otherwise expressed a bi-convex lens is understood to be meant. All *spectacles* for the aid of the eye are composed of some of the various forms of lenses. A thorough knowledge of their uses and component materials is all-essential to their successful adaptation. Erroneously adapted they injure and not infrequently destroy sight.

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REFRACTION AND ACCOMMODATION (1).

ELEMENTARY DEFINITIONS.

By the *refraction* is understood the faculty the eye possesses of focussing certain rays of light upon the retina; this is due to the shape of the globe and the refracting media, and is independent of the accommodative apparatus.

By the *accommodation* is understood the voluntary action whereby the eye becomes adjusted for vision of points nearer than is possible under refraction alone.

The exact method of accommodation is not fully settled. The most learned theories are those of Dudgeon and Helmholtz.

In viewing any point beyond about eighteen feet, the refraction alone is used, and the accommodation (or the eye sometimes) is said to be *at rest*; points nearer require the aid of the accommodation. Any object situated more than eighteen feet distant from the eye is said to be at an infinite distance; nearer, at a finite distance.

Emmetropia (synonym E) is a synonym for perfect refraction, that state in which parallel rays are brought to a focus upon the retina when the accommodation is at rest; *ametropia* for imperfect refraction, and embraces astigmatism, myopia, hypermetropia, and by some presbyopia, all of which see.

Asthenopia (synonym As) is a synonym for weakness of the sight.

An accurate knowledge of the principles of light, physical and physiological optics, embracing an intimate familiarity with the dioptrics of the eye, its excellencies and defects, (the latter requiring a complete knowledge of the higher mathematics) is absolutely essential for a thorough comprehension of the subject. A simple outline only can be presented, such as is necessary for an understanding of the main practical points.

ASTIGMATISM.

Synonyms: Irregular sight; A.

DEFINITION. Astigmatism is that state of refraction, when the eye being at rest, rays of light emanating from a point are not re-united at a point.

CAUSES. Asymmetry of refracting surfaces, whence no image is correctly formed on the retina. May be congenital or not, generally is; when not, is due to results of inflammation of cornea, defective union of cornea after cataract operations, etc. Often hereditary.

SYMPTOMS. Subjective, generally that the eye sees more than one image, and those distorted in shape and position. Objectively, with ophthalmoscope, distortion of the fundus; with oblique illumination, irregular corneal reflections and changes of curvature.

NOTE. The *principal* meridians are those of greatest and least curvature; different focal lengths of principal meridians cause *regular* astigmatism; differences of refraction in same meridian cause *irregular* astigmatism, which is incurable by glasses, though improved by stenopaic apparatus occasionally.

REGULAR ASTIGMATISM is called *simple* when one principal meridian is emmetropic and the other ametropic, as simple myopic A (synonym Am); simple hypermetropic A (synonym Ah); *compound*, when both are hypermetropic or myopic, but defect greater in one than the other, as compound myopic A (synonym M + Am); compound hypermetropic A, (synonym H + Ah); *mixed*, when one principal meridian is hypermetropic, the other myopic, as mixed A with predominant myopia (synonym Amh); or mixed A with predominant hypermetropia (synonym Ahm).

TREATMENT consists in the adaptation of proper cylindrical lenses; must often be combined with spherical, and sometimes with prismatic, lenses.